

# Comparison of traditional fecal culture, Danish Mix-ELISA and SalAD for determination of *Salmonella enterica* prevalence in growing swine

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**Abstract:** The goal of this study was to describe and compare serum antibody response (as determined by the Danish Mix-ELISA and the SalAD) to fecal shedding of *S. enterica* during the growing period in commercially raised, naturally infected swine. Longitudinal investigations of 5 groups of growing pigs in 2, three-site swine production systems were conducted. At the time of submission, fecal culture and Mix-ELISA (at OD  $\geq$  10 and  $\geq$  40) results were complete. Fifteen different serotypes were isolated from the 2 systems; the most frequently isolated serotypes were Mbandaka and Typhimurium var Copenhagen. Pig prevalence estimates by fecal culture and Mix-ELISA ranged from 0-48.1%, and 0-84% respectively. Visual analysis of graphical data demonstrates that prevalence estimates based on the Mix-ELISA and fecal culture were similar in pattern throughout the growing phase.

**Keywords:** pig-bacteria, diagnostic test

**Introduction:** To the best of our knowledge, there have been no longitudinal investigations to compare fecal culture and serum antibody response in naturally infected, commercially reared swine. The aim of this study is to compare fecal culture, the Danish Mix-ELISA, and the SalAD in sequentially sampled market swine in large three-site production units in North Carolina, USA.

**Materials and Methods:** Five cohorts of 50 individually identified pigs were serially sampled at 6 points during the growing period to determine the frequency of *S. enterica* infection. Samples were obtained pre-weaning (~21 days of age), after arrival at the nursery site (~28 days of age), prior to departing the nursery site (~10 weeks of age), after arrival at the finishing site (~11-12 weeks of age), mid-

finishing (~18 weeks of age), and pre-market (~22-24 weeks of age). Fecal culture of 10g samples was conducted at all sampling points as previously described (Funk et al., 2001). Serum samples were collected from the end of the nursery phase until finishing for all groups. For 2 groups, serum was also collected at the nursery arrival sample point. Duplicate serum samples were analysed using the Danish Mix-ELISA (Nielsen et al., 1995) by Dr. Harris at Iowa State University, Ames, IA and the SalAD by Dr. Gray (Gray and Fedorka-Cray, 1999) at the Agricultural Research Service laboratory, Athens, GA.

**Results (Preliminary):** Fifteen different serotypes were isolated from the 2 systems; the most frequently isolated serotypes were Mbandaka and Typhimurium var Copenhagen. Pig prevalence estimates by fecal culture ranged from 0-48.1%. Prevalence estimates based on the Mix-ELISA ranged from 0-84%. Visual analysis of graphical data demonstrates that prevalence estimates based on the Mix-ELISA and fecal culture were similar in pattern throughout the growing phase. Graphs of 2 of the 5 groups are shown in Figures 1 and 2.

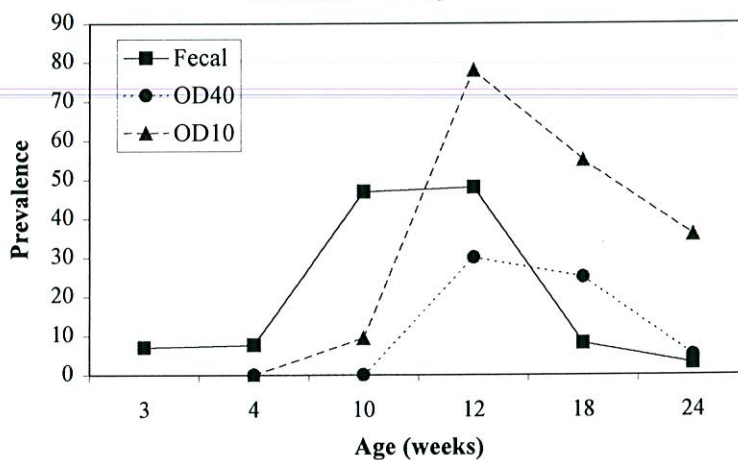
**Discussion:** To the best of our knowledge, this is the first report of a longitudinal investigation to compare fecal culture and serum antibody response to *S. enterica* in naturally infected, commercial swine. Initial results suggest that the Mix-ELISA has similar kinetics as fecal culture for estimation of prevalence of *S. enterica* infection at different points during the growing phase. Complete results for the SalAD and comparisons among the diagnostic tests will be presented at the poster session.

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## References

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**Figure1. Prevalence based on fecal culture and the Mix-ELISA for Farm A Group 1.**



**Figure 2. Prevalence based on fecal culture and the Mix-ELISA for Farm B Group 1.**

